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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
2683	6

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/929,034	COTANIS, NICOLAE G.
	Examiner	**Art Unit**
	Stephen M. D'Agosta	2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-9,12-16,19-24,28-30,32 and 33* is/are rejected.

7)☒ Claim(s) *5,10,11,17,18,25-27 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4,5*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for to Provisional application 60/225305 filed on 8-15-2000.

Information Disclosure Statement

The information disclosure statement filed April 23, 2002 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance for DE 4428729 A1 (even if it is referred to in the Search Report), as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

The drawings were received on 8-15-01 and have been reviewed by the draftsperson and examiner.

Claim Objections

Claim 12 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In the examiner's view,

Claim 12 states the same limitation as claim 1 whereby "a local mean is determined as an average of one or more subsets" and hence does not limit the claim any further. The examiner will accept claim 12 if the applicant's explanation is that it further limits claim 1 based on it reciting determining a plurality of local means where claim 1 states calculating a/one local mean (?).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7-9, 12, 19-20, 24, 28, 30, 32 and 33 rejected under 35 U.S.C. 102(b) as being anticipated by P. Stockl GSM/DCS Coverage Measurement System (hereafter Stockl).

As per **claim 1**, Stockl teaches a method for processing signal strength information from a radio frequency transmitter (title and abstract) comprising the steps of:

Receiving signal strength information indicating a power for the radio frequency transmitter at one or more locations (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),

Receiving location information representing a geographical location for one or more second locations (page 324, C1 bottom paragraph teaches use of GPS)

Dividing the received signal strength information into one or more subsets of signal strength information (page 324, C2, 6th paragraph teaches evaluating/averaging recorded data over <u>user-defined intervals</u> which reads on the use of subsets since the user has the ability to define a subset of data in regard to time, location, power, etc.),

Determining, for each of the one or more subsets, a local means such that the local mean represents an average for one of the one or more subsets (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"), and

Estimating a location for the local mean based on the received location information (page 324, C2, 7th paragraph cartographic representation, as does page 327, 1st paragraph which states displaying graphics on current position based on GPS. Also, figure 2 on page 329, which shows route/location and figure 3 shows a "detailed display" box in the upper left corner that identifies Cell ID, Mobile Country Code, Mobile Network Code and Location Area Code which all can be used to determine position).

As per **claim 7,** Stockl teaches claim 1 further comprising the step of receiving location information for one or more second location including one or more of the following: LAT/LONG and at least one of a plurality of first time stamps from a receiver

of GPS information (page 324, C1 bottom paragraph teaches use of GPS which inherently provides LAT/LONG and Time. Figure 4 also shows measurements vs. time).

As per **claim 8,** Stockl teaches claim 7 wherein said step of receiving signal strength information comprises receiving said signal strength information as a set of signal strength data based on a signal trace (abstract and page 323, C2 bottom paragraph to page 324, C1 first two paragraphs – the tester can vary the speed at which they travel for different measurements).

As per **claim 9,** Stockl teaches claim 8 further comprising attaching at least one of a plurality of second time stamps to the set of signal strength data (Stockl teaches use of GPS which has its own timestamp and a test device which runs on a computer and would have its own PC time – which reads on the applicant's claim as defined in the specification on bottom of page 14 to end of page 15. The examiner notes that the GPS time will differ from the PC time).

As per **claim 12,** Stockl teaches claim 1 wherein said step of determining further comprises determining a plurality of local means such that each local means corresponds to one of the one or more subsets (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals" hence a plurality of local means can be calculated).

As per **claim 19,** Stockl teaches claim 1 further comprising defining the one or more first locations as locations that differ from the one or more second locations (abstract and page 323, C2, 5th paragraph states "collected data during a test tour" and figure 2 shows points where the tester roamed to record data points – the examiner interprets that the tester will roam in a certain "area" which inherently includes different locations so first and second locations would be different).

As per **claim 20,** Stockl teaches a method for determining signal coverage for a wireless device (title, abstract) comprising the steps of:

Receiving signal strength information for a signal (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),,

Receiving location information representing a geographical location for one or more first locations (page 324, C1 bottom paragraph teaches use of GPS),

Determining one or more local means based on the received signal strength information (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"), and

Estimating one or more second locations for the one or more local means based on the one or more first locations (page 324, C2, 7th paragraph cartographic representation, as does page 327, 1st paragraph which states displaying graphics on current position based on GPS. Also, figure 2 on page 329, which shows route/location and figure 3 shows a "detailed display" box in the upper left corner that identifies Cell ID, Mobile Country Code, Mobile Network Code and Location Area Code which all can be used to determine position),

Transforming the one or more second locations into a route (page 326, C1 1st paragraph #2 teaches cartographic representation of data collected along a test route), and

Calculating the signal coverage for the route based on a signal coverage for at least one of the one or more second locations (page 323-324 teaches calculating via statistical evaluation of data with regard to signal reception/strength as recorded during the test trip and ultimately provide signal coverage data – this would be based on "Good/Bad" data points regarding RxLEV, BER, RxQual, etc., see page 327).

As per **claim 24,** Stockl teaches claim 20 further comprising the step of receiving location information for one or more second location including one or more of the following: LAT/LONG and at least one of a plurality of first time stamps from a receiver of GPS information (page 324, C1 bottom paragraph teaches use of GPS which inherently provides LAT/LONG and Time. Figure 4 also shows measurements vs. time).

As per **claim 28**, Stockl teaches a system for processing signal strength information from a radio frequency transmitter (title, abstract and pages 325-327 lists hardware/software components utilized) comprising:

Means for receiving signal strength information indicating a power for the radio frequency transmitter at one or more locations (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),

Means for receiving location information representing a geographical location for one or more second locations (page 324, C1 bottom paragraph teaches use of GPS)

Means for dividing the received signal strength information into one or more subsets of signal strength information (page 324, C2, 6th paragraph teaches evaluating/averaging recorded data over <u>user-defined intervals</u> which reads on the use of subsets since the user has the ability to define a subset of data in regard to time, location, power, etc.),

Means for determining, for each of the one or more subsets, a local means such that the local mean represents an average for one of the one or more subsets (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"), and

Means for estimating a location for the local mean based on the received location information (page 324, C2, 7th paragraph cartographic representation, as does page 327, 1st paragraph which states displaying graphics on current position based on GPS. Also, figure 2 on page 329, which shows route/location and figure 3 shows a "detailed display" box in the upper left corner that identifies Cell ID, Mobile Country Code, Mobile Network Code and Location Area Code which all can be used to determine position).

As per **claim 30,** Stockl teaches a system for determining signal coverage for a wireless device (title, abstract and pages 325-327 lists hardware/software components utilized) comprising the steps of:

Means for receiving signal strength information for a signal (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),,

Means for receiving location information representing a geographical location for one or more first locations (page 324, C1 bottom paragraph teaches use of GPS),

Means for determining one or more local means based on the received signal strength information (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"),

Means for estimating one or more second locations for the one or more local means based on the one or more first locations (page 324, C2, 7th paragraph cartographic representation, as does page 327, 1st paragraph which states displaying graphics on current position based on GPS. Also, figure 2 on page 329, which shows route/location and figure 3 shows a "detailed display" box in the upper left corner that identifies Cell ID, Mobile Country Code, Mobile Network Code and Location Area Code which all can be used to determine position),

Means for transforming the one or more second locations into a route (page 326, C1 1st paragraph #2 teaches cartographic representation of data collected along a test route), and

Means for calculating the signal coverage for the route based on a signal coverage for at least one of the one or more second locations (page 323-324 teaches calculating via statistical evaluation of data with regard to signal reception/strength as recorded during the test trip and ultimately provide signal coverage data – this would be based on "Good/Bad" data points regarding RxLEV, BER, RxQual, etc., see page 327).

As per **claim 32,** Stockl teaches a system for processing signal strength information from a frequency transmitter (title, abstract and pages 325-327 lists hardware/software components utilized) comprising:

At least one memory (page 324, C2, 1st paragraph teaches memory)

Code for receiving signal strength information indicating a power for the radio frequency transmitter at one or more fist locations (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),,

Code that receives location information representing a geographical location for one or more first locations (page 324, C1 bottom paragraph teaches use of GPS),

Code that divides the received signal strength information into one or more subsets of signal strength information (page 324, C2, 6th paragraph teaches evaluating/averaging recorded data over <u>user-defined intervals</u> which reads on the use of subsets since the user has the ability to define a subset of data in regard to time, location, power, etc.),

Code that determines, for each of the one or more subsets, a local means such that the local mean represents an average for one of the one or more subsets (page

324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"),

At least one processor that executes said code (pages 325-327 teach the hardware components of the system and inherently require a computer processor to perform the functions described, also see page 325, C2 2nd to last bullet teaches MS-WINDOWS which runs on a computer).

As per **claim 33,** Stockl teaches a system for determining signal coverage for a wireless device (title, abstract and pages 325-327 lists hardware/software components utilized) comprising:

At least one memory (page 324, C2, 1st paragraph teaches memory)

Code that receives signal strength information for a signal (page 323, C2, last paragraph to page 324, C1 first two paragraphs teaches field strength measurements such as SNR and BER and being capable of measuring parameters to determine the quality of a signal, eg. power. Also see page 326, C1, 3rd paragraph/bullet which refers to RXQual and RxLEV, where RxLEV is interpreted as received power),,

Code that receives location information representing a geographical location for one or more first locations (page 324, C1 bottom paragraph teaches use of GPS),

Code that determines one or more local means based on the received signal strength information (page 324, C2, 6th paragraph teaches statistical analysis that includes "averaging over user-defined intervals"),

Code that estimates one or more second locations for the one or more local means based on the one or more first locations (page 324, C2, 7th paragraph cartographic representation, as does page 327, 1st paragraph which states displaying graphics on current position based on GPS. Also, figure 2 on page 329, which shows route/location and figure 3 shows a "detailed display" box in the upper left corner that identifies Cell ID, Mobile Country Code, Mobile Network Code and Location Area Code which all can be used to determine position),

Code that transforms the one or more second locations into a route (page 326, C1 1st paragraph #2 teaches cartographic representation of data collected along a test route),

Code that calculate the signal coverage for the route based on a signal coverage for at least one of the one or more second locations (page 323-324 teaches calculating via statistical evaluation of data with regard to signal reception/strength as recorded during the test trip and ultimately provide signal coverage data – this would be based on "Good/Bad" data points regarding RxLEV, BER, RxQual, etc., see page 327), and

At least one processor that executes said code (pages 325-327 teach the hardware components of the system and inherently require a computer processor to perform the functions described, also see page 325, C2 2nd to last bullet teaches MS-WINDOWS which runs on a computer).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

<u>**Claims 2-4, 6, 29**</u> rejected under 35 U.S.C. 103(a) as being unpatentable over Stockl.

As per **claim 2,** Stockl teaches claim 1 **but is silent on** further comprising the step of determining at least one distance between one or more estimated locations for one or more local means.

Stockl does teach use of GPS and determination of local means which can be used to calculate a distance (page 324, C1 last paragraph teaches use of GPS and C2, 7th paragraph teaches graphing time or distance covered as does page 326, C2, last paragraph 1st bullet which teaches realtime graphics showing data based on position while figure 2, page 329 shows the route taken during the test [and a ref. point LAT/LONG, bottom of diagram] so one skilled can use the system's computer to correlate distance(s) based on recorded data when computed as a "local means" (eg. averaged grouping). For example, if the tester performs three tests in a cell by driving 10 miles three times, Stockl's system can correlate the position of each test's data and determine a distance to the BTS based on GPS data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that a distance is determined between locations, to provide means for determining the distance between the roaming mobile and the BTS for signal coverage mapping.

As per **claim 3,** Stockl teaches claim 2 **but is silent on** further comprising the step of dividing the received signal strength information into one or more subsets based on the at least one distance.

The main focus of Stockl is to measure the performance of a cell site by driving around said cell and taking signal measurements based on location. Stockl teaches many different statistical evaluations that can be performed via computer based on user-defined intervals - page 324, C2, 6th paragraph – and hence the examiner interprets that the system can also provide means for measuring the different signal strengths and forming subsets based on position, distance, speed, etc. which reads on the claim.

Stockl also states that the user interface should be easy to use and comply with common operating concepts which would provide means to manipulate the data and calculate various parameters, eg. distance, at the user's request.

Lastly, Stockl teaches use of a TS9955-GSM device (page 325, C1, last paragraph) which is used for planning, extension and optimization of cellular networks and would provide this capability.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that RSSi is divided into subsets based on distance, to provide means for correlating and understanding a cell's performance between distance and RSSi.

As per **claim 4,** Stockl teaches claim 3 **but is silent on** wherein said step of dividing further comprises the step of determining the at least one distance based on speed of a receiver.

Stockl does teach use of GPS which can determine a user's position at a specific time. One skilled can determine a speed for said user by dividing the distance covered by the travel time. For example, one can start at 1pm at LAT/LONG "X" and finish 1 hour later at LAT/LONG "Y" – speed is the distance between X and Y divided by 1 hour.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such one determines distance based on speed, to provide means to correlate and understand if speed is a factor for signal reception/coverage.

As per **claim 6,** Stockl teaches claim 2 **but is silent on** further comprising the step of interpolating a local mean when the at least one distance exceeds a predetermined distance.

Stockl does teach statistical evaluation of results which one skilled would use to project/interpolate a local mean if data was unavailable and/or a distance was exceeded. The Stockl system can use trending data (several data points), to interpolate an outcome if/when a trend appears to exist – eg. if the user is driving away from the BTS test antenna and the power is dropping, one can interpolate that the slope of the power drop will continue in the same manner even after a predetermined distance is exceeded.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that interpolation is used if a distance is exceeded, to provide means to project coverage based on anticipated data if/when the tester would exceed certain test limits.

As per **claim 29,** Stockl teaches claim 28 **but is silent on** further comprising the step of determining at least one distance between one or more estimated locations for one or more local means.

Stockl does teach use of GPS and determination of local means which can be used to calculate a distance (page 324, C1 last paragraph teaches use of GPS and C2, 7th paragraph teaches graphing time or distance covered as does page 326, C2, last paragraph 1st bullet which teaches realtime graphics showing data based on position while figure 2, page 329 shows the route taken during the test [and a ref. point LAT/LONG, bottom of diagram] so one skilled can use the system's computer to

correlate distance(s) based on recorded data when computed as a "local means" (eg. averaged grouping). For example, if the tester performs three tests in a cell by driving 10 miles three times, Stockl's system can correlate the position of each test's data and determine a distance to the BTS based on GPS data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that distance is determined between estimated locations for one local means, to provide distance between tester and BTS for a grouping of points (eg. local means, which defines a coverage area).

<u>**Claims 13-16 and 22-23**</u> rejected under 35 U.S.C. 103(a) as being unpatentable over Stockl as applied to claim1 and 20 above, and further in view of LeBlanc et al. US 5,960,341 (hereafter LeBlanc).

As per **claim 13,** Stockl teaches claim 12 **but is silent on** averaging one or more of the plurality of local means to provide a window average.

Leblanc teaches, as known to those skilled in the art, the basic idea behind Bollinger Bands is to read data points and create a moving average and a moving standard deviation. The bands are determined by calculating the average of a certain number of data points plus and minus two times the standard deviation of the data. A "sliding <u>window</u>" is used for the volatility of the data. The optimal <u>window</u> size will vary with the condition of the data. As shown in FIG. 13, Bollinger Bands provide: (1) the ability to handle discontinuities and vast multi-model, noisy search spaces; and (2) they optimize error wherever possible, i.e., wherever field measurements have a low volatility, then Bollinger Bands will generally have a low bandwidth, which results in a more accurate bounding polygon (C26, L39-53).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that sliding window average is used, to provide a mathematical means to optimize error.

As per **claim 14,** Stockl in view of LeBlanc teaches claim 13 **but is silent on** wherein averaging further comprises determining a difference value based on one of the plurality of local means and the window average.

Leblanc teaches a sliding window (C26, L39-53). One skilled can then calculate a difference between the local means and the sliding window value(s) to ensure that the data trustworthy, eg. as the window slides, a large difference between window value and local mean(s) will infer that the there is a problem in that area of the cell (poor coverage).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl in view of LeBlanc, such that a difference is determined, to provide means to correlate an error/difference value for the recorded data (eg. one will see the difference as going up or down as the window slides and is subtracted from local means – a large(r) number means poor data).

As per **claim 15,** Stockl in view of LeBlanc teaches claim 14 **but is silent on** wherein said step of averaging further comprises determining a plurality of difference values.

Leblanc teaches a sliding window (C26, L39-53). One skilled can apply this technique to determine "a plurality of differences" based on the tester collecting enough data so that multiple calculations can be performed (eg. Stockl teaches testing for one hour, page 324, C1 first paragraph which would provide myriad data points – one skilled would desire to collect significant amounts of data so the test is not skewed by being based on a limited amount).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl in view of LeBlanc, such that averaging determines a plurality of difference values, to provide means for feedback on the difference/error values (eg. just looking at an average of the difference/error to understand if it is trending as a low number or not)

As per **claim 16,** Stockl in view of LeBlanc teaches claim 15 **but is silent on** calculating a standard deviation based on the plurality of difference values.

Leblanc teaches As known to those skilled in the art, the basic idea behind Bollinger Bands is to read data points and create a moving average and a <u>moving standard deviation</u> (C26, L39-53).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl in view of LeBlanc, such that standard deviation is used, to provide means for optimizing errors via mathematical formulas.

As per **claim 22,** Stockl teaches claim 20 **but is silent on** determining a standard deviation based on the received signal strength information.

One skilled realizes the benefits of using a standard deviation calculation to enhance data interpretation and Leblanc teaches the Bollinger Bands method that reads data points and create a moving average and a <u>moving standard deviation</u> (C26, L39-53).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that standard deviation is used, to provide means for optimizing errors via mathematical formulas.

As per **claim 23,** Stockl in view of LeBlanc teaches claim 22 **but is silent on** determining the standard deviation based on one or more difference values, such that a difference value represents the difference between a local mean and a corresponding window average.

Leblanc teaches the basic idea behind Bollinger Bands is to read data points and create a moving average and a moving standard deviation. The bands are determined by calculating the average of a certain number of data points plus and minus two times the standard deviation of the data. A "sliding <u>window</u>" is used for the volatility of the data. The optimal <u>window</u> size will vary with the condition of the data. As shown in FIG. 13, Bollinger Bands provide: (1) the ability to handle discontinuities and vast multi-model, noisy search spaces; and (2) they optimize error wherever possible, i.e., wherever field measurements have a low volatility, then Bollinger Bands will generally

have a low bandwidth, which results in a more accurate bounding polygon (C26, L39-53).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Stockl, such that standard deviation is used, to provide a mathematical means to optimize error.

Allowable Subject Matter

Claims 5, 10-11, 17-18, 21, 25-27 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The examiner believes these claims to be novel based on their highly specific design limitations and/or use of specific mathematical expressions.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1. O'Donnel US 6,266,514
2. Labedz et al. US 6,072,778
3. Bonta et al. US 5,758,264
4. Osterberg et al. US 5,561,839
5. Tayloe et al. US 5,095,500
6. Bernadin et al. US 6,173,185

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen D'Agosta